



# Luthin Confidential

## Associates



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## The 40th Anniversary of the Summer of Love



**Why The Summer of Love?** *As a child of the 60's, I remember that the hippies were viewed as agents of change, promising the dawn of a new age. "Peace and Love" were a state of mind, not a slogan. "Living in Harmony with Mother Earth" was an essential message they were spreading. 1967's Summer of Love marked the peak of that movement. This Summer is the 40th Anniversary of the Summer of Love and this issue celebrates the growth of the Green Movement as we cover some of the current green energy issues.* *Catherine Luthin*

Above Photo: Luthin Staff (left to right) Catherine, Nat, Fran, John, Ellen, Rakesh, and Eileen

### High Tech Benchmarking With Portfolio Manager

While most building operators understand how much energy they use and how much they spend on energy, it is often difficult to understand these figures in the context of what it means to their facility. Are they energy hogs? How do they compare to similar buildings? After spending significant funds on energy conservation, how can they see the impact? Measurement and verification can help answer these questions on a micro-level, that is, for that piece of equipment. However, at the whole building level, something more is required. Energy Benchmarking can provide the context for both of these issues.

The Energy Star Portfolio Manager system was developed and is supported by the Environmental Protection Agency (EPA). Portfolio Manager uses a combination of actual and simulated building energy usage data from thousands of facilities across the U.S. This web-based

software is fast becoming the industry standard for benchmarking building energy use. Taking into account variables of size, weather, computer usage, occupancy, energy sources, type of space usage, and other factors, the Portfolio Manager process provides a consistent way to compare how efficiently energy is being used, and creates a basis for assessing potential savings through facility upgrades.

The end result boils down a vast quantity of descriptive building data into two easy-to-use numbers: the Energy Usage Index (EUI) in annual BTUs used per square foot of space and the Energy Cost Index (ECI), which quantifies the annual dollar cost per square foot of space. Portfolio Manager then compares those numbers to those of like buildings having the same characteristics and develops a percentile ranking of the subject building against the others. A high per-

centile rating indicates a lower energy density than many comparable buildings faced with the same challenges (e.g., a data center with long operating hours), rather than the "apples to oranges" comparisons that may result from less-sophisticated benchmarking methods. The EPA considers a rating of 75 or better to be the standard for their Energy Star building designation, with a 50 rating being the average.

The Portfolio Manager is gaining popularity with other organizations that are now requiring its use. The Green Building Council uses the portfolio Manager as a requirement for its certification, LEED for Existing Buildings. In order to qualify for LEED-EB, buildings must receive a minimum EUI of 60. Other organizations such as NYSERDA require that for rebates for projects such as commissioning, the applicant must use the Portfolio Manager

for benchmarking as part of the project requirements.

Luthin Associates recommends that before embarking on a program to implement energy conservation projects, you should require your vendors to include development of your facility benchmark as part of the work-scope. This will enable you to start verifying the value of the project being implemented.

Given that Portfolio Manager uses historical data, organizations that have implemented energy conservation projects within the past 24 months, may still be able to develop their benchmark retroactively, utilizing energy data from before the projects began.

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#### Quotable Quote:

"Sometimes a scream is better than a thesis."

**Ralph Waldo Emerson**

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## High Tech Benchmarking With Portfolio Manager

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You can readily obtain historical energy usage data from your suppliers and utilities. Additional data such as facility size, occupancy levels, and space type information, if available, will enable this benchmark to be developed. You can then apply current performance metrics to the benchmark to ascertain the building's success in reducing energy usage and costs.

We recommend a three pronged approach to the energy information services. In addition to developing the benchmarks, you or your consultant will gather energy bills and develop utilization and cost indexes. Then enter this data into a tariff analysis system and verify the accuracy of your bills. We recommend a review of your commodity contracts to ensure that these are being billed correctly.

The third step to understanding energy costs is an analysis of your electric and steam profiles. A 3D Load Profile Analysis will enable you or your consultant to identify anomalies in elec-

tric load profiles such as high demand spikes to reduce demand charges and develop more cost effective operating strategies. Where there are dual fuel systems that include redundant steam and or gas cooling capacity, these electric profiles can be reviewed in conjunction with the steam or gas profile to optimize the multi-fuel capabilities.

An additional analysis can be performed, which would include a review of a building's hourly steam profile. With the onset of steam demand billing in November of 2007, building operators are faced with the same 'demand spike' issues with steam as they are with electric. Also, understanding when steam is used may enable an operator to shift some heating load into the period prior to the 6AM on peak period to avoid the higher demand charges. Your steam profile and heating degree data in both tabular and graphical form should be compiled. This enables you to get a picture of how your steam usage correlates to weather conditions. You should be able to quantify the cost of any inefficient operating practices and recommend both

operational and equipment related solutions.

To truly understand your energy usage, you need to develop the historical benchmark, review the current and historical details of your energy profile, and transform this information into a picture of where you are. Then do something to save energy and get a new look at your energy profile. Benchmarking is like watching a tree grow, it may take a year to notice the change but when you do, it is significant.



## \$ 4.7 billion reasons why we are not on the sidelines

**I**n early May, Con Edison filed for an 11.6% rate hike starting in April 2008, with additional increases of 3.2% and 3.7% in 2009 and 2010, totaling over 18% as per the company's press releases. But these numbers cloud the real impact of such costs: they are based on a customer's total electric bill, but the proposed increases fall only on the delivery portion which is mostly transmission and distribution (T&D).

Delivery accounts for only about a third of the bill, so an 18% jump in the total bill is averaging a 34% jump in the delivery part. The rest of the bill (called 'supply') is primarily a pass-through of market rates that, by themselves, rose ~30% in the last three years. The impact will vary among rate classes: SC 9 Rate II (for example) demand charges would rise in the first year by 18.4% and energy charges by 23.6%. The majority of customers would receive increases of about 40% or more. While these differences (and more) are justified by cost studies, we expect pressure from other parties to reduce these disparities.

Part of the rationale for the \$4.7 billion rate hike is growth on the Transmission & Distribution (T&D) system. The company states that electricity use has grown more

than 20 percent in the past 10 years. As the demand for power grows, that T&D system gets stressed, sometimes resulting in a week-long blackout like we saw in Queens last summer. Con Ed has hiked rates before to upgrade T&D - \$2.5 Billion in capital expenditures in the last 3-year rate plan - yet we still saw localized failures. Con Ed will have a lot of explaining to do to justify that more costly upgrades will indeed result in more reliable service.

The majority of Con Ed's request includes capital spending for "significant infrastructure investments": new and upgraded substations (\$942 million), underground primary and secondary cable, (\$899 million), advanced storm response (\$154 million), upgrade and replace transformers (\$899 million) and lastly, \$340 million for smart meters.

While part of the proposed increase results from a limited availability of customer credits which helped "buy down" earlier rate hikes, another chunk is based on raising the utility's return on equity from 10.3% to 11.5%. Next time you're grumbling over the 4% return on your CDs, give that number some thought.

Further, adding to the rate hike are programs to reduce grid stress by cutting peak demand. These programs should result in efficiency savings that offset their rate impact, but only for participating customers. Program design that allows effective

participation by our members is essential.

Here's the Bottom Line: commercial/institutional building managers could see (by the end of the three-year rate hike) an increase of \$.25 to \$.40 a square foot in their annual energy cost, depending on usage, voltage, etc.

Various obscure changes with potentially large impacts are also in the works. Financial hedging costs for power bought from Con Ed (called the Market Supply Charge, or MSC) will be shifted from the still-regulated part of the bill into the MSC, and it will cease such hedging for power it sells to customers with peak demands over 500 kW. Costs for environmental initiatives (including renewable resources and greenhouse gas reductions) are also being shifted to the MSC. In one positive development, some NYISO charges currently paid by Retail Access customers will be properly reassigned to full service customers. These changes should push many still buying commodities from Con Ed to finally make the leap to competitive power service, if only to avoid future price volatility.

Con Ed is unlikely to get anywhere near what it's asking - and "Consumer Power Advocates" (CPA) will be at the negotiating table to make sure.

## Are alternative energy sources driving the commodity markets or vice versa?

The short answer to that question is “yes” – to varying degrees, both actions are taking place. Like two stars orbiting each other, their paths are impacted by their interactions.

One must be clear, however, regarding which “alternatives” are under discussion. Renewable energy sources – such as wind, solar, biomass, tidal, hydro, and geothermal – represent a broad spectrum of options requiring little or no inputs from other forms of energy. Some are either already cost-effective (hydro, geothermal) or almost so (e.g., wind, biomass), while others (solar, tidal) are still too expensive to be considered competitive. On the other hand, biofuels such as ethanol and bio-

diesel require significant inputs from other energy sources (either renewable or fossil) but are already entering the competitive arena, though still presently supported by subsidies.

Energy conversion systems (such as fuel cells or distributed generation) are not, however, alternative energy sources. The latter may be powered by either renewables or fossil fuels and merely convert energy from one form (e.g., natural gas) into another (e.g., electricity).

In the short term (i.e., the next few years), some renewables are attracting significant investment, though still much less than that of established sources such as

coal and natural gas. While venture capital for renewables has more than doubled in the last year, the total dollars involved are miniscule compared to the ongoing investment in fossil fuel exploration and development.

In a few specific cases, uncertainty regarding the growth rate of biofuels has affected investment in new giant oil refineries that, while needed to make gasoline, are not essential to produce ethanol. Insufficient refining capacity then drives up the cost of refined products when they must be imported or bought at margin. Likewise, the production of ethanol demands a great deal of natural gas which pushes up the commodity price of that fuel, in turn accelerating in-

vestment in gas exploration and liquefied natural gas (LNG) facilities.

The major driver for both interest and investment in all alternatives is, however, the ever rising price of fossil fuels and the differential that creates relative to renewables. If the prices of oil and natural gas were to once again fall significantly (as occurred in the ‘80s), venture capital for all forms of alternatives would dry up (as occurred in the ‘80s). Only a sustained economic push by government – via subsidies, taxes, and regulations – would keep investments in alternatives alive.

*(Continued on page 4)*

## The luminous lights at Roosevelt Island’s Gristedes supermarket



*A model of the tidal turbines submerged in the East River near Roosevelt Island, NY*

Tudor Investment Corp, a \$17.7 million hedge fund, has made a \$15 million bet that tidal energy will be the wave of the future. That investment was made in a New York based power company named Verdant Power LLC.

Verdant has bolted six submerged turbines with three seven-foot long blades attached to a rotor, on the East river bed near Roosevelt Island. The turbines are similar to a wind turbine in its design, and use the free flow or the Kinetic Hydropower System (KHPS) technology. Therefore, it does not require damming of water. Also, since water density is 850 times more than air, one can deploy a larger rotor in water and thereby generate significantly more power.

However, it is critical to keep these turbines from stalling with changing currents. Verdant’s Dean Corren has successfully accomplished this by adding the right pitch and the twist to the blades. The turbines are also capable of changing direction as the tidal direction changes. Moreover,

water waves are more predictable as opposed to the wind waves.

The turbines generate more than 1000 Kilowatt hours of clean, emission-free, environment-friendly electricity per day. Verdant has spent \$2 million on fish sensors to ensure that the fish pass by safely. Its control room is an 8-foot by 20-foot metal trailer on Roosevelt Island packed with computers and power control boxes.

It powers Roosevelt Island’s (located between Manhattan and Queens) Gristedes supermarket, and the Roosevelt Island Operating Corp’s “Motorgate” parking garage.

The company plans to deploy up to 300 KHPS turbines by 2010, which could provide 10 Megawatts of power locally, while operating at full capacity; enough to power almost 8000 New York homes.

It also envisions deploying turbines into large rivers such as Amazon basin, bays, irrigation canals as well as water treatment facilities since their turbines do not involve damming of water. William “Trey” Taylor, founder of Verdant Power, believes that their robust 3D CAD/CAM design and simulation tech-

nology, used in deploying turbines in East River would make this vision feasible.

Verdant Power was founded by Taylor in 2000. In the 1990s, Taylor and his two partners set out to commercialize Phillippe Vauthier’s tidal turbine model. Vauthier was a jewelry maker, who was once commissioned by Tiffany & Co. to make a chalice for Pope John Paul II. Taylor and his partners emptied their savings and retirement accounts to build a prototype of the model. However, Vauthier refused to divulge his plan to Taylor’s engineers.

Unflustered, Taylor looked for another design and stumbled upon New York University’s research scientist, Dean Corren’s design in a paper from the U.S. Department of Energy’s Idaho National Laboratory. Corren received a patent of his turbine design in 1986, and he joined Verdant in 2002 to help implement his design.

Verdant does face aggressive competition from seven other energy companies since there are only 22 sites in the U.S. to study the tidal waters. Nonethe-

less, Tudor Jones is betting on Verdant Power due to its proven technology and robust management. Mayor Michael Bloomberg supporting the Roosevelt Island Tidal Energy (RITE) Project said, “Supporting innovative projects like Verdant’s is an important part of PlaNYC and will help us meet our goal of reducing New York City’s greenhouse gas emissions by 30% by 2030.”

### Did You Know?

**For every unit of fossil-fuel energy used in corn-based ethanol production, 1.34 units of ethanol are produced.**

**For every unit of fossil-fuel energy used in biodiesel production, 3.2 units of biodiesel are produced.**



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**L**uthin Associates, Inc. is an energy management consulting firm serving Tri-State and national clientele with a variety of energy procurement services since its founding in 1994. Our core business is fossil fuel contract development; fuel, steam and electric negotiation and alternate rate opportunities, energy purchase management and customer education for deregulated markets. Our client experience includes strategic energy initiatives for major universities, state and local governments, numerous major healthcare facilities and real estate concerns. In our former positions, and as Luthin Associates, we have 85 years' collective experience in energy and financial management.



**CPA Schedule 2007**

July	August	September
CPA Meeting July 17	NO CPA Meeting	CPA Meeting September 11

**Are alternative energy sources driving the commodity markets or vice versa?**

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In the long run, government policies with regard to global warming, national security, societal sustainability and other lofty concepts may indeed provide the economic impetus to maintain investment in alternatives. Mr. Brian Chin, an alternative energy analyst at Citigroup, noted that "Focus on sustainability resulting from vast evidence of onshore oil having peaked as well as the need for energy security and independence have contributed to the

increased interest in alternatives. Additionally, environmental concerns due to growing evidence of sharp climate changes along with rising oil prices have added to it."

Because the demand for energy continues to grow (especially in the developing world), however, the investment climate is not an "either - or" situation: capital is being poured into all sources at the same time. It is therefore likely that we will see further expansion of both fossil fuels (as long as recovery costs remain reasonable) as well as their alternatives. As Travis Bradford, a former

executive of Prometheus Institute for Sustainable Development pointed out to Tech News World, "It's the 'The Wave of Silicon': computers, telecommunications and, now, energy. It's all happened due to the specific technological and economic characteristics of silicon-based semiconductors. Those were radical, disruptive technologies that changed everything about the way we see and do things in the world. We didn't abandon existing technologies completely - we have a hybrid system."

**On a Personal Note**



**I** am a little more than 50 years old, and my colleague John Dowling, who covers the regulatory issues with me is slightly older. We remember the energy policies of the 60's, 70's, 80's and the 90's as the current focus is on energy conservation and green energy. It's no wonder the following lyric from the Beatles song, "Two of Us", has been running through my head lately: "You and I have memories longer than that road that stretches out ahead."

It's wonderful to hear so many politicians, movie stars, and even some major energy customers extolling a "greener" way of life: taxis with hybrid engines, buildings made with recycled construction materials, and tax credits for those exceeding government energy standards. These are all great ideas. It's just that John and I have heard much of this before. Yes, that's right, we had the flower children in the '60s, envi-

ronmentalists in the '70s, alternative energy geeks in the '80s, and solar activists in the '90s. Each contributed a bit toward improving the world, but they barely scratched the surface of the problems of growth, fossil fuel dependence, and global warming. Are the newly converted also seeing the world through green-colored glasses, or is there something else also going on?

Pull aside some of that greenery and you may find a few lobbyists hiding underneath, chatting about ways to secure ever larger government subsidies, grant programs, or other forms of "No Energy Contractor Left Behind" funding. While some of that money goes toward extremely worthwhile efforts to cut energy use and demand, we have often seen exaggerated claims of energy savings (some greater than energy use!) as customers continue to wonder why their energy bills just won't go down.

It is often hard to tell where the well-meaning ends and the naiveté begin. The need to cut energy use is so great, that in recent proceed-

ings, the message was, "Do the best you can; details of specific results will be worked out later."

We know that just throwing money at a problem does not solve a problem. Effective energy conservation measures have defined efficiency levels and demonstrable measurement and verification. This should be the cornerstone of the creation of energy efficiency programs, not an afterthought.

Let's hope that this time we're not seeing another passing fad, or worse yet, a repeat of the failed regulatory policies of the past. Because, quite frankly, I want to get that Beatles song out of my head.

*Catherine Luthin  
July '07*

